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NUTCRACKER

Be it known that I, Nadine Ross, a citizen of the United States and a resident of rural Ferry County in the State of Washington, whose Post Office address is 25055 Highway 395 North, Kettle Falls, Washington, 99141-9567, have invented certain new and useful improvements in a NUTCRACKER of which the following is a specification and for which I pray the issuance of **utility Letters Patent**.

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II. BACKGROUND OF INVENTION

II.A RELATED APPLICATIONS

There are no applications related hereto heretofore filed
5 in this or any foreign country by the Applicant.

II.B FIELD OF INVENTION

This invention relates generally to food apparatus and
more particularly to impact type shell openers to aid in
10 removal of shells from a plurality of smaller brittle shelled
nuts in a single discreet operation.

II.C BACKGROUND AND DESCRIPTION OF PRIOR ART

Since the earliest times of human history nuts have
15 provided a human food stuff, commonly of a quite desirable
nature, and still are of substantial importance as a food stuff
in various parts of the world. Since nuts by definition
comprise the seed or fruit of a plant comprising a kernel
surrounded by a more hard and usually frangible shell that does
20 not split open at maturity and since only the kernel is edible,
removal of nut shells from nut kernels has long presented a
problem. Responsive to the problem many and various apparatus

have been developed and become known to remove shells from
nuts and those devices commonly have been generically
designated as "nutcrackers". The term "nutcracker" is used
herein in this generic sense without reference to any
5 particular method or means of opening or removing a nut shell
or to any particular type of nut or nut shell to be opened as
removed.

Most nutcrackers heretofore known have been designed and
structured either to crack or open individual nuts in a single
10 discreet operation such as for an individual consumer or to
crack substantial numbers of nuts in a continuous process such
as in a commercial nut cracking process. The instant
nutcracker provides a device for cracking a quantity of nuts
of up to a few pounds in a single discreet operation such as
15 for a user desiring medial quantities of nut meats for home use
or for small commercial operations while yet providing the
primary beneficial features of both the individual and
commercial types of nutcrackers.

One particular problem with many individual nutcrackers
20 has been the containment and collection of shell debris
resulting from the cracking operation. Normally a nut shell
to be crackable must be reasonably brittle and when such a

shell is cracked by either impact or leverage type nutcrackers
a shell at the time of cracking tends to break into a plurality
of pieces that are generally somewhat randomly dispersed about
the cracking mechanism with sufficient force that they tend to
5 be widely spread. This tends to make the nut shell debris
difficult to collect for disposition. Additionally during the
cracking process the nut meats commonly are somewhat broken
apart and the broken nut meats tend to be randomly intersperced
with the cracked shell debris to make more difficult
10 separation of the nut meats from the shell debris and
collection of the nut meats. The instant invention solves this
problem by providing a cracking chamber in which the nuts being
cracked are substantially contained during the cracking
operation so that both the shell debris and nut meats after the
15 cracking operation are maintained within the cracking chamber
to make it easier to separate the nut meats from the shell
debris and collect both for disposition.

It has heretofore been known, especially with individual
nut cracking devices, to containerize a nut during the cracking
20 process. The nutcrackers that have done this, however,
generally have been of a compound complex nature which
increases their cost and makes their operation more difficult

and time consuming. In distinguishment, the instant invention provides a simple chamber in which a plurality of nuts are cracked by impacting while being continuously contained.

In non-commercial nutcrackers impact type cracking of nuts
5 is generally faster and more efficient than leverage type compression cracking, but in general with either type of such prior nutcrackers there has not been mechanical control limiting the cracking force of either an impact or a compressive nature. The only control available has been by
10 possible manual manipulation of the cracking tool by the operator which has not been effective or efficient. The instant nutcracker causes cracking by use of an impact type force, but while so doing mechanically limits the distance through which that force may be applied to the shells of nuts
15 to be cracked. This mechanical limitation not only tends to maintain the cracked nutshells in larger pieces but also tends to maintain nut meats within the cracked shells in larger more desirable pieces so that both components may be more easily separated after the cracking process than they could be with
20 previously known impact type cracking process.

To accomplish mechanical limitation of the distance through which a cracking force operates on a group of nut

shells, I provide a plurality of spacers carried in a cracking box and defining a similarly configured and positioned medial cracking chambers so that a plurality of such frames may be stacked upon each other to define a cracking chamber of
5 adjustably variable height. The nuts to be cracked and carried within the cracking chamber are impacted by a striker plate of greater areal size than the cracking chamber so that the cracking plate may not pass within the cracking chamber.

My invention lies not in any one or combination of the
10 foregoing features but rather in the synergistic combination of all of its structures which necessarily give rise to the functions flowing therefrom as hereinafter claimed.

III. SUMMARY OF INVENTION

15 My nutcracker provides a five sided box-like base having an open top and defining a medial slot in its forward wall for removal of nut shells. The base carries a rigid bottom plate having a peripheral configuration substantially the same as the exposed internal surface of the bottom. A plurality of flat
20 planar spacers having various thickness is provided for use with the base. Each spacer has a peripheral configuration substantially the same as the bottom plate carried in the base

and defines similar medial orifices of the same size to define a cracking chamber when one or more spacers are placed in stacked array on the bottom plate. Each spacer preferably provides an outwardly extending handle-like tab configured to
5 extend forwardly through the orifice defined in the front side of the base. A cracking plate having a flat planar head with a peripheral configuration somewhat geometrically similar to but larger than the cracking chamber defined by one or more spacers and with a medial upwardly projecting manipulative
10 handle is associated with the nutcracker system to impact nuts to cause actual cracking.

For use the nut cracking system is assembled with the bottom plate in the base and a plurality of spacers stacked on the bottom plate to a depth that allows approximately 10% to
15 20% of the average vertical dimension of a plurality of nuts to be cracked to extend above the upper surface of the upper spacer. The cracking chamber defined by the spacers is then loosely filled with a single layer of a plurality of nuts and the striker plate is manually manipulated with a downwardly
20 impacting motion to impact on the upper spacer over the upper orifice defined by the cracking chamber. Shells of the nuts within the cracking chamber generally then will be shattered,

and if not, the impacting operation may be repeated until the shells are sufficiently shattered. After substantially all of the shells and nuts in the cracking chamber are cracked, the nut meats are manually separated from the shells and picked out
5 of the cracking chamber for use. Thereafter the spacers are vertically removed from the base and the nut shells on the bottom plate are removed through the orifice defined in the forward wall of the base by aid of an auxiliary brush to a waste bin positioned below and forwardly adjacent to the base
10 for subsequent disposition. The cracking operation then is repeated in the same fashion until all desired nuts are cracked.

In creating such a device, it is:

A principal object to provide a nutcracker system to
15 crack a plurality of smaller or brittle shelled nuts in a single discreet operation.

A further object is to provide such a cracking system that cracks such nuts by manually powered impact type force.

A further object is to provide such a nut cracking system
20 that mechanically limits the distance that an impacting force is applied to the nut shells to provide a maximum shell cracking force with a minimum break up of or damage to nut

kernels within the cracked shells.

A further object is to provide such a nut cracking system which substantially contains the plurality of nuts during the cracking operation to prevent dispersement of nut shells and
5 meats beyond a peripherally defined cracking chamber.

A still further object is to provide such a nut cracking system wherein the depth of the cracking chamber may be regulated by selection and stacking of one or more spacers having similar medial orifices to define the cracking chamber.

10 A still further object is to provide such a nut cracking system wherein the spacers defining the cracking chamber can be removed from a supporting base after a cracking operation to allow easy removal of cracked nut shells from the supporting base.

15 A still further object is to provide such a nut cracking system that is of new and novel design, of rugged and durable nature, of simple and economic manufacture and otherwise well suited to the uses and purposes for which it is intended.

Other and further objects of my invention will appear from
20 the following specification and accompanying drawings which form a part hereof. In carrying out the objects of my invention, however, it is to be understood that it's essential

features are susceptible of change in design, structural arrangement and ordering with only one preferred and practical embodiment of the best known mode being illustrated and specified as is required.

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IV. BRIEF DESCRIPTION OF DRAWINGS

In the accompanying drawings which form a part hereof and wherein like numbers of reference refer to similar parts throughout:

5 Figure 1 is an isometric view of my nut cracking system showing its various parts, their configuration and relationship.

Figure 2 is an elongate vertical cross-sectional view through the nutcracker of Figure 1, taken on the line 2-2
10 thereon in the direction indicated by the arrows.

Figures 3A-3E are similar isometric views of the nutcracker system of Figure 1 showing the cracking process of the instant nutcracker system.

Figure 3F is an elongately extending vertical cross-
15 sectional view through the nutcracker system of Figure 3B, taken on the line 3F-3F thereon in the direction indicated by the arrows, with the striker plate moving to impact unshelled nuts in the cracking chamber.

Figure 3G is a laterally extending vertical cross-
20 sectional view through the nutcracker system of Figure 3B, taken as on the line 3F-3F thereon in the direction indicated by the arrows, with the striker plate moving away from shelled

nuts in the cracking chamber.

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V. DESCRIPTION OF THE PREFERRED EMBODIMENT

My nutcracker system generally provides base **10** defining an open top chamber to stackably receive one or more similar spacers **11** defining medial orifices to form a cracking chamber for nuts **13** when impacted by striker plate **12**. An associated support **14**, brush **15** and waste container **16** make the cracking process more convenient, but are not a necessary part of the nutcracker system.

Base **10** comprises a five-sided open top box formed by bottom **17**, similar opposed sides **18**, back **19** and front **20** all structurally joined at the immediately adjacent surfaces of each base element to define open top spacer chamber **21**. Front **20** defines medial slot **22** preferably depending to the upper surface of bottom **17** to aid in removal of cracked nut shells from the cracking chamber formed by spacer chamber **21**. To crack quantities of approximately one to three pounds of smaller brittle shelled nuts, such as almonds and walnuts, the external dimensions of the base should be approximately 17 inches in length, 13 inches in width and 4 inches in height. I prefer to form the base of wood material and when so formed the spacer chamber preferably has a length of approximately 14

inches, a width of approximately 10 inches and a height of approximately 3 inches.

Bottom plate **23** is carried on the upper surface of bottom **17** and preferably is coextensive with the exposed upper surface of the bottom **17** to require, in the instance illustrated a length of approximately 14 inches and a width of approximately 10 inches. This bottom plate **17** preferably is formed of some hard durable material of substantial density to provide a surface that aids the impact type cracking of frangible nut shells and to provide some inertia resistive to an impact force transmitted by impacted nuts on the bottom plate. The material of preference for the bottom plate is a metal such as iron or steel of approximately $\frac{1}{2}$ inch thickness, which in the preferred rectilinear configuration of 14 by 10 inches will weigh approximately eighteen pounds to provide substantial inertia resisting impact force generated motion.

Spacers **11** provide flat planar bodies **24** having a general peripheral configuration substantially similar to the exposed upper surface of bottom **17** so as to fit immediately inwardly adjacent the inner vertical surfaces of base **10** and the upper horizontal surface of bottom plate **23**. Each spacer **11** defines

a medial orifice **25**, in the instance illustrated of rectilinear configuration with an elongate dimension of approximately 11 inches and a width of approximately 9 inches, though this dimensioning is not critical and may vary so long as the periphery of the spacer about the orifice is continuous. The orifice **25** preferably is symmetrically positioned in the body **24**, with substantially equal body portions on each side of the orifice and substantially equal body portions on each end of the orifice, which need not necessarily be the same as the side portions. Preferably a forwardly projecting handle-like protuberance **26** is provided on the forward edge of each spacer **11** to aid in manipulating the spacer **11** in and out of chamber **21** of the base **10**. If a spacer **11** of the type indicated is used, the handle-like portion **26** must of necessity have a total lateral extension less than the width of medial slot **22** in front **20** of the base **10** and must be positioned for the protuberance **26** to extend through that slot **22** to allow proper operation of the nutcracker.

A plurality of spacers **11**, all having similar configuration as described, but preferably at least some having different thicknesses, are provided for use with the nutcracker

system to allow positioning of one or more spacers in stacked array on bottom plate **23** to provide a cracking chamber **27** of variable depth. Preferably the spacers **11** have thicknesses varying by quarter inch amounts from 1/4 inch to at least 1
5 inch to accommodate proper cracking of nuts having various average diametrical size, different shapes and different shell fractionating characteristics.

Striker plate **12** provides planar plate-like body **28**, preferably having a peripheral configuration geometrically
10 similar to that of orifice **25** in spacers **11**, which in the instance illustrated would be rectilinear. The plate **28** for effective operation must have a dimension that allows it to freely pass downwardly in chamber **21** of base **10** and yet prevents it from passing downwardly within cracking chamber **27**
15 defined by spacers **11**. While meeting this requirement it is preferred for convenience that the body **28** cover cracking chamber **27** when impacted upon the upper surface of the uppermost spacer **11** defining the cracking chamber **27**. To accomplish this end preferably the striking plate **28** has a
20 width and length each approximately 2 inches greater than the corresponding dimensions of the cracking chamber **27** so that

approximately 1 inch margins of the cracking plate **28** will extend beyond the periphery of cracking chamber **27** when the striker plate is diametrically centered thereover. The striker plate **28** for convenience of manipulation carries vertically
5 upwardly extending handle **29** positioned in its medial portion and structurally interconnected therewith.

For effective operation of my nutcracker the striker plate **12** must be impacted upon the upper surface of nut shells to cause cracking force. This requires that the striker plate
10 body **28** be formed of some hard rigid material of substantial density to create an appropriate impact force upon nut shells to be cracked. The materials of preference for formation of the striker plate **28** is a harder more dense metal such as iron or steel. Preferably the striker plate should have a
15 configuration such that when formed of iron or steel it will have a mass of at least 4 to 10 pounds to be fairly readily manually manipulable and yet sufficiently massive to provide appropriate impact to crack nuts **13** in the cracking chamber **27**.

Having described the structure of my nutcracker system its
20 operation may be understood.

The nutcracker system produced in accordance with the foregoing specification is assembled and positioned on the

support **14** having two substantially horizontal surfaces adjacent to each other at different vertical heights such as on a raised porch and associated stair structure as illustrated in Figure 1. Base **10** is positioned with its front **20** at or
5 slightly forwardly of the forward or outer edge of the upper horizontal surface and the waste container **16** is positioned with its rearward or inner edge below and preferably slightly under the forward edge of base **10** so that shelled nut debris may be removed from chamber **21** through medial slot **22** in the
10 base and thence moved by gravity downwardly into waste container **16**.

Bottom plate **23** is then placed on bottom **17** of base **10**, if not previously so established. One or more spacers **11** are chosen for use with the particular batch of nuts to be cracked.
15 The spacer or spacers **11** are chosen so that when stacked vertically above each other their total vertical height will be approximately 80% to 90% of the average height of nuts **13** to be cracked so that when a batch of nuts **13** are placed in the cracking chamber **27** defined by the one or more spacers
20 approximately 10% to 20% of the nuts will project above the upper surface of the uppermost spacer **11**. The best and most

desirable amount of projection of in-shell nuts for cracking must be determined empirically as it varies with various factors related to the particular nuts to be cracked. If the nut have a small variance in average vertical height or have
5 shells that are easily fractured, the required projection of the nut shells above the upper surface of the upper spacer **11** may be in the lower operable range indicated whereas greater variance in average vertical heights of nuts and tough nut shells having low frangibility, such as in the case of black
10 walnuts, nuts shells having high moisture content or nut shells having substantial size variance, would be in the higher operable range. The desirable operative range is also affected by the amount of impacting force applied to the nut shells and how that force is applied. The most desirable depth of the
15 cracking chamber generally may be quite easily determined empirically by an average user of the nut cracking system with little effort and in a relatively short period of experimentation.

After the system is assembled and positioned as aforesaid,
20 a batch of nuts **13** to be cracked is established in the cracking chamber **27** in a loosely packed single layer, preferably with at least some of the nuts having portions of their shells in

immediate adjacency.

With the nut batch arrayed in the cracking chamber **27**, the striker plate **12** is manually grasped by handle **29** and moved to a position over and spacedly above cracking chamber **27**. The
5 striker plate **12** then is manually manipulated to move downwardly, normally with some acceleration in addition to that provided by the force of gravity, to impact upon portions of nut shells projecting the cracking chamber and move downwardly as those shells are cracked to be stopped by contact with the
10 upper surface of the uppermost spacer **11**. The striker plate **12** then is manually moved vertically upwardly and out of base chamber **21**. If any significant number of nut shells appear to be uncracked and to extend above the upper surface of the upper spacer plate, the impacting operation may be continued so long
15 as necessary until all or substantially all of the crackable nuts in the cracking chamber have been cracked. Normally one or two impacting procedures are sufficient to crack substantially all of a nut batch. No more impacting than necessary should be used as it may tend to break up nut meat
20 kernels in the cracking chamber.

After completion of the cracking process of a nut batch, striker plate **12** is stored, commonly on the upper surface of

base **10** or support **14**, and the spacer or spacers **11** in chamber **21** of the base **10** are removed upwardly from chamber **21** and stored, commonly on support **14** as indicated in Figure 3C. The meat kernels of nuts **13** then are manually removed from chamber **21** and stored for further use as shown in Figure 3D. In this regard it is to be noted that the bottom of cracking chamber **27** is areally smaller than the exposed upper surface of bottom plate **23**, so the nut meat kernels and shell debris will tend to spread in a somewhat looser array on the bottom plate **23** when the spacers **11** are removed to aid in finding and manually recovering the nut meat kernels.

After recovery and removal of the nut meat kernels from the base chamber **21**, the debris remaining on bottom plate **23** is moved into waste container **16**. This removal is accomplished by manual manipulation and may be aided by known tools such as brush **15**. By reason of the positional relationship of waste container **16** relative to base **10**, nut shell debris may be moved forwardly in chamber **21** and pushed out through medial slot **22** in front **20** to allow gravity to move the shell debris downwardly and into the adjacently underlying waste container **16** for containment and subsequent disposition. The nutcracker

system now is ready for use on an additional batch of nuts in the same fashion as described for the first batch of nuts.

The foregoing description of my invention is necessarily of a detailed nature so that a specific embodiment of it might
5 be set forth as required, but it is to be understood that various modifications of detail, rearrangement and multiplication of parts might be resorted to without departing from its spirit, essence or scope. My invention is not intended to be limited other than by the claims appended hereto
10 and forming a part hereof.

Having thusly described my invention, what I desire to protect by Letters Patent, and

What I claim is:

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